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SEQUENCE LISTING

<110> ⟨Dranoff⟩, Glenn
      Schmollinger, Jan
      Hodi, F. Stephen
      Mollick, Joseph

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65   70   75   80
Trp Arg Ala Thr Arg Asp Met Cys Arg Tyr Arg His Asn Tyr Pro Asp
            85   90   95
Leu Val Glu Arg Asp Cys Asn Gly Asp Thr Pro Asn Leu Ser Phe Tyr
            100   105   110
Arg Asn Glu Ile Arg Phe Leu Pro Asn Gly Cys Phe Ile Glu Asp Ile
        115   120   125
Leu Gln Asn Trp Thr Asp Asn Tyr Asp Leu Leu Glu Asp Asn His Ser
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Tyr Ile Gln Trp Leu Phe Pro Leu Arg Glu Pro Gly Val Asn Trp His
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Ala Lys Pro Leu Thr Leu Arg Glu Val Glu Val Phe Lys Ser Ser Gln
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Glu Ile Gln Glu Arg Leu Val Arg Ala Tyr Glu Leu Met Leu Gly Phe
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Tyr Gly Ile Arg Leu Glu Asp Arg Gly Thr Gly Thr Val Gly Arg Ala
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225   230   235   240
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            260   265   270
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        35   40   45
His Arg Arg Pro Gln Ala Pro Ala Gln Gln Asp Leu Gln Gly Thr Ser
    50   55   60
Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Gln Gln Asp Leu
65   70   75   80
Gln Gly Thr Ser Arg Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala
            85   90   95
Gln Gln Asp Leu Gln Gly Thr Ser Gln Pro Arg Pro His Arg Arg Pro
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Gln Ala Pro Ala Arg Gln Asp Leu Gln Gly Met Ser Gln Pro Arg Ala
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His Arg Arg Pro Gln Ala Pro Ala Arg Gln Asp Leu Gln Gly Thr Ser
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145   150   155   160
Gln Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala
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Arg Gln Asp Leu Gln Gly Met Ser Gln Pro Arg Arg Gly Arg Gln Gln
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Ser Cys Arg Thr Gln Arg Trp Ser Leu Leu Pro Ser Leu Gly Ser Leu
        195   200   205
Lys Glu Arg Ser Ala Arg Arg Arg Leu Gly Pro Pro Val Pro Ala Ala
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Val Leu Gln Ala Leu Tyr Phe Cys Arg Pro Phe Arg Glu Asn Val Leu
    50                  55                  60
Ala Tyr Lys Ala Gln Gln Lys Lys Glu Asn Leu Leu Thr Cys Leu
65                  70                  75                  80
Ala Asp Leu Phe His Ser Ile Ala Thr Gln Lys Lys Lys Val Gly Val
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Ile Pro Pro Lys Lys Phe Ile Ser Arg Leu Arg Lys Glu Asn Asp Leu
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Phe Asp Asn Tyr Met Gln Gln Asp Ala His Glu Phe Leu Asn Tyr Leu
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Thr Asn Glu Thr Arg Cys Leu Asn Cys Glu Thr Val Ser Ser Lys Asp
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Glu Asp Phe Leu Asp Leu Ser Val Asp Val Glu Gln Asn Thr Ser Ile
            195                 200                 205
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225                 230                 235                 240
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Cys Gly Ser Gly Pro Asn Arg Gly His Tyr Ile Thr Ile Val Lys Ser
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His Gly Phe Trp Leu Leu Phe Asp Asp Asp Ile Val Glu Lys Ile Asp
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<213> homo sapiens

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Gly Asn Arg Trp Thr Phe Asn Pro Ala Val Leu Thr Lys Ala Asn Ile
    50              55              60
Val Arg Ser Gly Asp Ala Ala Gln Gly Ala Glu Gly Gly Thr Ser Gln
65              70              75              80
Phe Gln Val Gly Asp Leu Val Gln Val Cys Tyr Asp Leu Glu Arg Ile
            85              90              95
Lys Leu Leu Gln Arg Gly His Gly Glu Trp Ala Glu Ala Met Leu Pro
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Thr Leu Gly Lys Val Gly Arg Val Gln Gln Ile Tyr Ser Asp Ser Asp
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Leu Lys Val Glu Val Cys Gly Thr Ser Trp Thr Tyr Asn Pro Ala Ala
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Val Ser Lys Val Ala Ser Ala Gly Ser Ala Ile Ser Asn Ala Ser Gly
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Glu Arg Leu Ser Gln Leu Leu Lys Lys Leu Phe Glu Thr Gln Glu Ser
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Gly Asp Leu Asn Glu Glu Leu Val Lys Ala Ala Ala Asn Gly Asp Val
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Ala Lys Val Glu Asp Leu Leu Lys Arg Pro Asp Val Asp Val Asn Gly
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Gln Cys Ala Gly His Thr Ala Met Gln Ala Ala Ser Gln Asn Gly His
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Ala Arg Asn Lys Arg Arg Gln Thr Pro Leu His Ile Ala Val Asn Lys
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Gly His Leu Gln Val Val Lys Thr Leu Leu Asp Phe Gly Cys His Pro
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Val Thr Ile Thr Asn Asn Asn Gly Phe Asn Ala Leu His His Ala Ala
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Arg Pro Trp Ile Val Asp Glu Lys Lys Asp Asp Gly Tyr Thr Ala Leu
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Thr Pro Leu His Glu Ala Leu Arg His His Thr Leu Ser Gln Leu Arg
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Pro Asp Pro Asn Leu Cys Lys Ala Leu Ala Lys Cys His Lys Glu Lys
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Val Ser Gly Gln Val Gly Ser Arg Ser Pro Ser Met Ile Ser Asn Asp
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Ser Glu Thr Leu Glu Glu Cys Met Val Cys Ser Asp Met Lys Arg Asp
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Thr Leu Phe Gly Pro Cys Gly His Ile Ala Thr Cys Ser Leu Cys Ser
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Pro Arg Val Lys Lys Cys Leu Ile Cys Lys Glu Gln Val Gln Ser Arg
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Thr Lys Ile Glu Glu Cys Val Val Cys Ser Asp Lys Lys Ala Ala Val
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Leu Met Lys Lys Cys Val Gln Cys Arg Ala Val Val Glu Arg Arg Val
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Asp Ile Ser Ser Gly Asn Ile Pro Val Leu Gln Lys Asp Lys Asp Asn
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Ile Lys Glu Gln Thr Met Cys Pro Val Cys Leu Asp Arg Leu Lys Asn
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Ile Ile Tyr Leu Trp Leu Leu Arg Gly Lys Ser Phe Lys Asp Ile Leu
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Phe Glx Lys Ile Ala Phe Phe Ser Tyr Asn Leu Glx Ile Cys Trp Ile
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Ser Lys Asp Ile Ile Leu Cys Asp Gln Leu Ser Phe Ile Ser Ser Trp
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Phe Tyr Thr Val Ser Glx Glx Gln Val Leu Glx Glu Val Met His Gln
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Ile Lys Glu Ala Gly Gln Thr Ile Met Ser His Gly Lys Leu Glx Asn
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Asp Ser Thr Ser Ser Arg Glx Leu Arg Glu Tyr Arg Arg Asp Asp Ser
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Phe Phe Lys Ile Thr Gly Ser Tyr Pro His Val Cys Phe Glx Ile Leu
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Arg Val Asn Gly Ser Ile Glu Glx Gly Asn Asn Asp Phe Ala Phe Leu
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Leu Phe Ser Arg Phe Lys Arg Asn Ile Val Glx Leu Glu Ser Asp Tyr
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Gln Phe Gln Gly Asp Glx Glx Thr Arg Lys Gly Lys Ile Ser Asn Asn
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Trp Thr Ser Glu Val Leu Phe Ser Phe Ala Asp Val His Ser Ile Pro
          1060                  1065                  1070
Val Ile Cys Lys Ile Asn Ala Phe Ser Lys Lys Lys Ser Phe Leu Leu
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Cys Ile Ser Glx Phe Glx Gln Cys Glx Glx Phe Cys Leu His Tyr Arg
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Gln Gln Tyr Pro Arg His Gly Gln Glx Pro Asn Tyr Lys Tyr Phe Arg
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<213> homo sapiens

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Glu Glu Glu Glu Glu Gly Ala Gly Ala Thr Leu Ser Arg Gly Pro Ala
65              70              75              80
Phe Pro Gly Met Gly Ser Glu Glu Leu Arg Leu Ala Ser Phe Tyr Asp
            85              90              95
Trp Pro Leu Thr Ala Glu Val Pro Pro Glu Leu Leu Ala Ala Ala Gly
            100             105             110
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Gly Gly Leu Gln Ser Trp Lys Arg Gly Asp Asp Pro Trp Thr Glu His
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Ala Lys Trp Phe Pro Ser Cys Gln Phe Leu Leu Arg Ser Lys Gly Arg
145             150             155             160
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Leu Pro His Pro Leu Glu Gly Ser Arg Lys Val Glu Glu Glu Gly Ser
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Pro Gly Asp Pro Asp His Glu Ala Ser Thr Gln Gly Arg Thr Cys Gly
            260             265             270
Pro Glu His Ser Lys Gly Gly Gly Arg Val Asp Glu Gly Pro Gln Pro
        275             280             285
Arg Ser Val Glu Pro Gln Asp Ala Gly Pro Leu Glu Arg Ser Gln Gly
        290             295             300
Asp Glu Ala Gly Gly His Gly Glu Asp Arg Pro Glu Pro Leu Ser Pro
305             310             315             320
Lys Glu Ser Lys Lys Arg Lys Leu Glu Leu Ser Arg Arg Glu Gln Pro
            325             330             335
Pro Thr Glu Pro Gly Pro Gln Ser Ala Ser Glu Val Glu Lys Ile Ala
            340             345         .   350
Leu Asn Leu Glu Gly Cys Ala Leu Ser Gln Gly Ser Leu Arg Thr Gly
            355             360             365
Thr Gln Glu Val Gly Gly Gln Asp Pro Gly Glu Ala Val Gln Pro Cys
        370             375             380
Arg Gln Pro Leu Gly Ala Arg Val Ala Asp Lys Val Arg Lys Arg Arg
385             390             395             400
Lys Val Asp Glu Gly Ala Gly Asp Ser Ala Ala Val Ala Ser Gly Gly
            405             410             415
Ala Gln Thr Leu Ala Leu Ala Gly Ser Pro Ala Pro Ser Gly His Pro
        420             425             430
Lys Ala Gly His Ser Glu Asn Gly Val Glu Glu Asp Thr Glu Gly Arg
        435             440             445
Thr Gly Pro Lys Glu Gly Thr Pro Gly Ser Pro Ser Glu Thr Pro Gly
    450             455             460
Pro Arg Pro Ala Gly Pro Ala Gly Asp Glu Pro Ala Glu Ser Pro Ser
465             470             475             480
Glu Thr Pro Gly Pro Ser Pro Ala Gly Pro Thr Arg Asp Glu Pro Ala
            485             490             495
Glu Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala Gly Pro Ala Gly
            500             505             510
Asp Glu Pro Ala Glu Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala
        515             520             525
Gly Pro Ala Gly Asp Glu Pro Ala Glu Ser Pro Ser Glu Thr Pro Gly
        530             535             540
Pro Ser Pro Ala Gly Pro Thr Arg Asp Glu Pro Ala Lys Ala Gly Glu
545             550             555             560
Ala Ala Glu Leu Gln Asp Ala Glu Val Glu Ser Ser Ala Lys Ser Gly
            565             570             575
Lys Pro
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<210> 19

<211> 176
<212> PRT
<213> homo sapiens

<400> 19
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Met Arg Val Leu Gly Thr Val Leu Arg Trp Pro Val Val Val Pro Arg
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Pro Trp Pro Leu Pro Gly Pro Leu Pro His Arg Gly Thr Pro Arg Leu
            20                  25                  30
Asp Thr Val Arg Thr Gly Leu Arg Arg Thr Gln Lys Val Glu Arg Gly
        35                  40                  45
Pro Lys Lys Val Pro Leu Gly Ala His Arg Arg Pro Gln Ala Pro Ala
    50                  55                  60
Gln Gln Asp Leu Gln Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro
65                  70                  75                  80
Gln Ala Pro Ala Arg Gln Asp Leu Gln Gly Met Ser Gln Pro Arg Ala
                85                  90                  95
His Arg Arg Pro Gln Ala Pro Ala Arg Gln Asp Leu Gln Gly Thr Ser
            100                 105                 110
Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Arg Gln Asp Leu
        115                 120                 125
Gln Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala
    130                 135                 140
Arg Gln Asp Leu Gln Gly Met Ser Gln Pro Arg Arg Gly Arg Gln Gln
145                 150                 155                 160
Ser Cys Arg Thr Gln Arg Trp Ser Leu Leu Pro Ser Leu Gly Ser Leu
                165                 170                 175
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<210> 20
<211> 49
<212> PRT
<213> homo sapiens

<400> 20
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Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala Gly Pro Ala Gly Asp
1               5                   10                  15
Glu Pro Ala Glu Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala Gly
            20                  25                  30
Pro Ala Gly Asp Glu Pro Ala Lys Thr Pro Ser Glu Thr Pro Gly Pro
        35                  40                  45
Ser
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<210> 21
<211> 50
<212> PRT
<213> homo sapiens

<400> 21
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Ala His Arg Arg Pro Gln Ala Pro Ala Gln Gln Asp Leu Gln Gly Thr
1               5                   10                  15
Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Gln Gln Asp
            20                  25                  30
Leu Gln Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro
        35                  40                  45
Ala Gln
    50
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<210> 22
<211> 9

<212> PRT
<213> homo sapiens

<400> 22
Ser Leu Gly Ser Pro Val Leu Gly Leu
 1   5

<210> 23
<211> 10
<212> PRT
<213> homo sapiens

<400> 23
Arg Leu Ala Ser Phe Tyr Asp Trp Pro Leu
 1   5   10

<210> 24
<211> 20
<212> PRT
<213> homo sapiens

<220>
<221> VARIANT
<222> (2)...(17)
<223> Xaa at 2 is Thr or Met;
      Xaa at 4 is Gln or Arg;
      Xaa at 7 is Ala or Pro;
      Xaa at 16 is Arg or Gln.

<221> VARIANT
<222> 2, 4, 7, 16
<223> Xaa = Any Amino Acid

<400> 24
Gly Xaa Ser Xaa Pro Arg Xaa His Arg Arg Pro Gln Ala Pro Ala Xaa
 1   5   10   15
Gln Asp Leu Gln
            20

<210> 25
<211> 14
<212> PRT
<213> homo sapiens

<400> 25
Ala His Arg Arg Pro Gln Ala Pro Ala Gln Gln Asp Leu Gln
 1   5   10

<210> 26
<211> 20
<212> PRT
<213> homo sapiens

<400> 26
Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Arg
 1   5   10   15
Gln Asp Leu Gln
            20

<210> 27
<211> 20
<212> PRT
<213> homo sapiens

<400> 27
Gly Met Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Arg
 1   5   10   15
Gln Asp Leu Gln
            20

<210> 28
<211> 20
<212> PRT
<213> homo sapiens

<400> 28
Gly Thr Ser Gln Pro Arg Ala His Arg Arg Pro Gln Ala Pro Ala Gln
 1   5   10   15
Gln Asp Leu Gln
            20

<210> 29
<211> 20
<212> PRT
<213> homo sapiens

<400> 29
Gly Thr Ser Gln Pro Arg Pro His Arg Arg Pro Gln Ala Pro Ala Arg
 1   5   10   15
Gln Asp Leu Gln
            20

<210> 30
<211> 20
<212> PRT
<213> homo sapiens

<220>
<221> VARIANT
<222> (1)...(20)
<223> Xaa at 9 is Arg or Ser;
      Xaa at 14 is Ala or Thr;
      Xaa at 15 is Gly or Arg;
      Xaa at 20 is Glu or Lys

<221> VARIANT
<222> 9, 14, 15, 20
<223> Xaa = Any Amino Acid

<400> 30
Ser Pro Ser Glu Thr Pro Gly Pro Xaa Pro Ala Gly Pro Xaa Xaa Asp
 1   5   10   15
Glu Pro Ala Xaa
            20

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<210> 31
<211> 20
<212> PRT
<213> homo sapiens

<400> 31
Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala Gly Pro Ala Gly Asp
 1               5                   10                  15
Glu Pro Ala Glu
            20


<210> 32
<211> 20
<212> PRT
<213> homo sapiens

<400> 32
Ser Pro Ser Glu Thr Pro Gly Pro Ser Pro Ala Gly Pro Thr Arg Asp
 1               5                   10                  15
Glu Pro Ala Glu
            20


<210> 33
<211> 20
<212> PRT
<213> homo sapiens

<400> 33
Ser Pro Ser Glu Thr Pro Gly Pro Ser Pro Ala Gly Pro Thr Arg Asp
 1               5                   10                  15
Glu Pro Ala Lys
            20


<210> 34
<211> 6670
<212> DNA
<213> homo sapiens

<400> 34
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<210> 35
<211> 618
<212> PRT
<213> homo sapiens

<400> 35

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             20                  25                  30
Pro Asn Leu Ser Phe Tyr Arg Asn Glu Ile Arg Phe Leu Pro Asn Gly
         35                  40                  45
Cys Phe Ile Glu Asp Ile Leu Gln Asn Trp Thr Asp Asn Tyr Asp Leu
     50                  55                  60
Leu Glu Asp Asn His Ser Tyr Ile Gln Trp Leu Phe Pro Leu Arg Glu
65                  70                  75                  80
Pro Gly Val Asn Trp His Ala Lys Pro Leu Thr Leu Arg Glu Val Glu
                 85                  90                  95
Val Phe Lys Ser Ser Gln Glu Ile Gln Glu Arg Leu Val Arg Ala Tyr
                100                 105                 110
Ala Ala His Ala Gly Leu Leu Arg Asp Pro Ala Gly Gly Pro Arg His
            115                 120                 125
Gly His Gly Gly Pro Ser Thr Glu Leu Pro Glu Ala Leu Pro Glu Pro
        130                 135                 140
Glu Leu Arg Ser His Asn Asn Leu Arg Ile Thr Arg Ile Leu Lys Ser
145                 150                 155                 160
Leu Gly Glu Leu Gly Leu Glu His Phe Gln Ala Pro Leu Val Arg Phe
                165                 170                 175
Phe Leu Glu Glu Ser Leu Val Arg Arg Glu Leu Pro Gly Val Arg Gln
            180                 185                 190
Ser Ala Leu Asp Tyr Phe Met Phe Ala Val Gly Cys Arg His Gln Arg
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                    195                      200                      205
Arg Gln Leu Val His Phe Ala Trp Glu His Phe Arg Pro Arg Cys Lys
    210                      215                      220
Phe Val Trp Gly Pro Gln Asp Lys Leu Arg Arg Phe Lys Pro Ser Ser
225                      230                      235                      240
Leu Pro His Pro Leu Glu Gly Ser Arg Lys Val Glu Glu Glu Gly Ser
                    245                      250                      255
Pro Gly Asp Pro Asp His Glu Ala Ser Thr Gln Gly Arg Thr Cys Gly
                    260                      265                      270
Pro Glu His Ser Lys Gly Gly Gly Arg Val Asp Glu Gly Pro Gln Pro
                    275                      280                      285
Arg Ser Val Glu Pro Gln Asp Ala Gly Pro Leu Glu Arg Ser Gln Gly
                    290                      295                      300
Asp Glu Ala Gly Gly His Gly Glu Asp Arg Pro Glu Pro Leu Ser Pro
305                      310                      315                      320
Lys Glu Ser Lys Lys Arg Lys Leu Glu Leu Ser Arg Arg Glu Gln Pro
                    325                      330                      335
Pro Thr Glu Pro Gly Pro Gln Ser Ala Ser Glu Val Glu Lys Ile Ala
                    340                      345                      350
Leu Asn Leu Glu Gly Cys Ala Leu Ser Gln Gly Ser Leu Arg Thr Gly
                    355                      360                      365
Thr Gln Glu Val Gly Gly Gln Asp Pro Gly Glu Ala Val Gln Pro Cys
                    370                      375                      380
Arg Gln Pro Leu Gly Ala Arg Val Ala Asp Lys Val Arg Lys Arg Arg
385                      390                      395                      400
Lys Val Asp Glu Gly Ala Gly Asp Ser Ala Ala Val Ala Ser Gly Gly
                    405                      410                      415
Ala Gln Thr Leu Ala Leu Ala Gly Ser Pro Ala Pro Ser Gly His Pro
                    420                      425                      430
Lys Ala Gly His Ser Glu Asn Gly Val Glu Glu Asp Thr Glu Gly Arg
                    435                      440                      445
Thr Gly Pro Lys Glu Gly Thr Pro Gly Ser Pro Ser Glu Thr Pro Gly
                    450                      455                      460
Pro Ser Pro Ala Gly Pro Ala Gly Asp Glu Pro Ala Glu Ser Pro Ser
465                      470                      475                      480
Glu Thr Pro Gly Pro Arg Pro Ala Gly Pro Ala Gly Asp Glu Pro Ala
                    485                      490                      495
Glu Ser Pro Ser Glu Thr Pro Gly Pro Arg Pro Ala Gly Pro Ala Gly
                    500                      505                      510
Asp Glu Pro Ala Lys Thr Pro Ser Glu Thr Pro Gly Pro Ser Pro Ala
                    515                      520                      525
Gly Pro Thr Arg Asp Glu Pro Ala Glu Ser Pro Ser Glu Thr Pro Gly
                    530                      535                      540
Pro Arg Pro Ala Gly Pro Ala Gly Asp Glu Pro Ala Glu Ser Pro Ser
545                      550                      555                      560
Glu Thr Pro Gly Pro Arg Pro Ala Gly Pro Ala Gly Asp Glu Pro Ala
                    565                      570                      575
Glu Ser Pro Ser Glu Thr Pro Gly Pro Ser Pro Ala Gly Pro Thr Arg
                    580                      585                      590
Asp Glu Pro Ala Lys Ala Gly Glu Ala Ala Glu Leu Gln Asp Ala Glu
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Val Glu Ser Ser Ala Lys Ser Gly Lys Pro
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<210> 36
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<212> DNA
<213> homo sapiens

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<212> DNA
<213> homo sapiens

<400> 37
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<210> 38
<211> 141
<212> DNA
<213> homo sapiens

<400> 38
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ctgggtgggg aagacacagc c                                           141
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<210> 39
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<212> DNA
<213> homo sapiens

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<210> 40
<211> 309
<212> DNA
<213> homo sapiens

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<223> n = A,T,C or G

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<211> 178
<212> DNA
<213> homo sapiens

<400> 41
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<212> DNA
<213> homo sapiens

<220>
<221> misc_feature
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<223> n = A,T,C or G

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<211> 209
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<223> n = A,T,C or G

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<211> 241
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<211> 1299
<212> PRT
<213> homo sapiens

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            20                  25                  30
Asp Lys Arg Phe Arg Leu Trp Tyr Val Gly Gly Ser Cys Leu Asp His
        35                  40                  45
Arg Thr Thr Leu Pro Met Leu Pro Trp Leu Met Ala Glu Ile Arg Arg
    50                  55                  60
Arg Ser Gln Lys Pro Glu Ala Gly Gly Cys Gly Ala Pro Ala Ala Arg
65                  70                  75                  80
Glu Val Ile Leu Val Leu Ser Ala Pro Phe Leu Arg Cys Val Pro Ala
                85                  90                  95
Pro Gly Ala Gly Ala Ser Gly Gly Thr Ser Pro Ser Ala Thr Gln Pro
            100                 105                 110
Asn Pro Ala Val Phe Ile Phe Glu His Lys Ala Gln His Ile Ser Arg
        115                 120                 125
Phe Ile His Asn Ser His Asp Leu Thr Tyr Phe Ala Tyr Leu Ile Lys
    130                 135                 140
Ala Gln Pro Asp Asp Pro Glu Ser Gln Met Ala Cys His Val Phe Arg
145                 150                 155                 160
Ala Thr Asp Pro Ser Gln Val Pro Asp Val Ile Ser Ser Ile Arg Gln
                165                 170                 175
Leu Ser Lys Ala Ala Met Lys Glu Asp Ala Lys Pro Ser Lys Asp Asn
            180                 185                 190
Glu Asp Ala Phe Tyr Asn Ser Gln Lys Phe Glu Val Leu Tyr Cys Gly
        195                 200                 205
Lys Val Thr Val Thr His Lys Lys Ala Pro Ser Ser Leu Ile Asp Asp
    210                 215                 220
Cys Met Glu Lys Phe Ser Leu His Glu Gln Gln Arg Leu Lys Ile Gln
```

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Val Val Val Pro Gly Ser Pro Gly Asp Cys Leu Pro Glu Glu Ala Asp
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Gly Thr Asp Thr His Leu Gly Leu Pro Ala Gly Ala Ser Gln Pro Ala
            275                 280                 285
Leu Thr Ser Ser Arg Val Cys Phe Pro Glu Arg Ile Leu Glu Asp Ser
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Gly Phe Asp Glu Gln Gln Glu Phe Arg Ser Arg Cys Ser Ser Val Thr
305                 310                 315                 320
Gly Val Gln Arg Arg Val His Glu Gly Ser Gln Lys Ser Gln Pro Arg
                325                 330                 335
Arg Arg His Ala Ser Ala Pro Ser His Val Gln Pro Ser Asp Ser Glu
            340                 345                 350
Lys Asn Arg Thr Met Leu Phe Gln Val Gly Arg Phe Glu Ile Asn Leu
            355                 360                 365
Ile Ser Pro Asp Thr Lys Ser Val Val Leu Glu Lys Asn Phe Lys Asp
        370                 375                 380
Ile Ser Ser Cys Ser Gln Gly Ile Lys His Val Asp His Phe Gly Phe
385                 390                 395                 400
Ile Cys Arg Glu Ser Pro Glu Pro Gly Leu Ser Gln Tyr Ile Cys Tyr
                405                 410                 415
Val Phe Gln Cys Ala Ser Glu Ser Leu Val Asp Glu Val Met Leu Thr
            420                 425                 430
Leu Lys Gln Ala Phe Ser Thr Ala Ala Ala Leu Gln Ser Ala Lys Thr
            435                 440                 445
Gln Ile Lys Leu Cys Glu Ala Cys Pro Met His Ser Leu His Lys Leu
        450                 455                 460
Cys Glu Arg Ile Glu Gly Leu Tyr Pro Pro Arg Ala Lys Leu Val Ile
465                 470                 475                 480
Gln Arg His Leu Ser Ser Leu Thr Asp Asn Glu Gln Ala Asp Ile Phe
                485                 490                 495
Glu Arg Val Gln Lys Met Lys Pro Val Ser Asp Gln Glu Glu Asn Glu
            500                 505                 510
Leu Val Ile Leu His Leu Arg Gln Leu Cys Glu Ala Lys Gln Lys Thr
            515                 520                 525
His Val His Ile Gly Glu Gly Pro Ser Thr Ile Ser Asn Ser Thr Ile
        530                 535                 540
Pro Glu Asn Ala Thr Ser Ser Gly Arg Phe Lys Leu Asp Ile Leu Lys
545                 550                 555                 560
Asn Lys Ala Lys Arg Ser Leu Thr Ser Ser Leu Glu Asn Ile Phe Ser
                565                 570                 575
Arg Gly Ala Asn Arg Met Arg Gly Arg Leu Gly Ser Val Asp Ser Phe
            580                 585                 590
Glu Arg Ser Asn Ser Leu Ala Ser Glu Lys Asp Tyr Ser Pro Gly Asp
            595                 600                 605
Ser Pro Pro Gly Thr Pro Pro Ala Ser Pro Pro Ser Ser Ala Trp Gln
        610                 615                 620
Thr Phe Pro Glu Glu Asp Ser Asp Ser Pro Gln Phe Arg Arg Arg Ala
625                 630                 635                 640
His Thr Phe Ser His Pro Pro Ser Ser Thr Lys Arg Lys Leu Asn Leu
                645                 650                 655
Gln Asp Gly Arg Ala Gln Gly Val Arg Ser Pro Leu Leu Arg Gln Ser
            660                 665                 670
Ser Ser Glu Gln Cys Ser Asn Leu Ser Ser Val Arg Arg Met Tyr Lys
            675                 680                 685
Glu Ser Asn Ser Ser Ser Ser Leu Pro Ser Leu His Thr Ser Phe Ser
        690                 695                 700
Ala Pro Ser Phe Thr Ala Pro Ser Phe Leu Lys Ser Phe Tyr Gln Asn
705                 710                 715                 720
Ser Gly Arg Leu Ser Pro Gln Tyr Glu Asn Glu Ile Arg Gln Asp Thr
                725                 730                 735
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Ala Ser Glu Ser Ser Asp Gly Glu Gly Arg Lys Arg Thr Ser Ser Thr
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Cys Ser Asn Glu Ser Leu Ser Val Gly Gly Thr Ser Val Thr Pro Arg
        755   760   765

Arg Ile Ser Trp Arg Gln Arg Ile Phe Leu Arg Val Ala Ser Pro Met
    770   775   780

Asn Lys Ser Pro Ser Ala Met Gln Gln Gln Asp Gly Leu Asp Arg Asn
785   790   795   800

Glu Leu Leu Pro Leu Ser Pro Leu Ser Pro Thr Met Glu Glu Glu Pro
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Leu Val Ile Phe Leu Ser Gly Glu Asp Asp Pro Glu Lys Ile Glu Glu
            820   825   830

Arg Lys Lys Ser Lys Glu Leu Arg Ser Leu Trp Arg Lys Ala Ile His
        835   840   845

Gln Gln Ile Leu Leu Leu Arg Met Glu Lys Glu Asn Gln Lys Leu Glu
    850   855   860

Gly Ala Ser Arg Asp Glu Leu Gln Ser Arg Lys Val Lys Leu Asp Tyr
865   870   875   880

Glu Glu Val Gly Ala Cys Gln Lys Glu Val Leu Ile Thr Trp Asp Lys
            885   890   895

Lys Leu Leu Asn Cys Arg Ala Lys Ile Arg Cys Asp Met Glu Asp Ile
        900   905   910

His Thr Leu Leu Lys Glu Gly Val Pro Lys Ser Arg Arg Gly Glu Ile
        915   920   925

Trp Gln Phe Leu Ala Leu Gln Tyr Arg Leu Arg His Arg Leu Pro Asn
    930   935   940

Lys Gln Gln Pro Pro Asp Ile Ser Tyr Lys Glu Leu Leu Lys Gln Leu
945   950   955   960

Thr Ala Gln Gln His Ala Ile Leu Val Asp Leu Gly Arg Thr Phe Pro
        965   970   975

Thr His Pro Tyr Phe Ser Val Gln Leu Gly Pro Gly Gln Leu Ser Leu
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Phe Asn Leu Leu Lys Ala Tyr Ser Leu Leu Asp Lys Glu Val Gly Tyr
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Cys Gln Gly Ile Ser Phe Val Ala Gly Val Leu Leu Leu His Met Ser
    1010   1015   1020

Glu Glu Gln Ala Phe Glu Met Leu Lys Phe Leu Met Tyr Asp Leu Gly
1025   1030   1035   1040

Phe Arg Lys Gln Tyr Arg Pro Asp Met Met Ser Leu Gln Ile Gln Met
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Tyr Gln Leu Ser Arg Leu Leu His Asp Tyr His Arg Asp Leu Tyr Asn
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His Leu Glu Glu Asn Glu Ile Ser Pro Ser Leu Tyr Ala Ala Pro Trp
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Phe Leu Thr Leu Phe Ala Ser Gln Phe Ser Leu Gly Phe Val Ala Arg
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Val Phe Asp Ile Ile Phe Leu Gln Gly Thr Glu Val Ile Phe Lys Val
1105   1110   1115   1120

Ala Leu Ser Leu Leu Ser Ser Gln Glu Thr Leu Ile Met Glu Cys Glu
            1125   1130   1135

Ser Phe Glu Asn Ile Val Glu Phe Leu Lys Asn Thr Leu Pro Asp Met
            1140   1145   1150

Asn Thr Ser Glu Met Glu Lys Ile Ile Thr Gln Val Phe Glu Met Asp
        1155   1160   1165

Ile Ser Lys Gln Leu His Ala Tyr Glu Val Glu Tyr His Val Leu Gln
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Asp Glu Leu Gln Glu Ser Ser Tyr Ser Cys Glu Asp Ser Glu Thr Leu
1185   1190   1195   1200

Glu Lys Leu Glu Arg Ala Asn Ser Gln Leu Lys Arg Gln Asn Met Asp
            1205   1210   1215

Leu Leu Glu Lys Leu Gln Val Ala His Thr Lys Ile Gln Ala Leu Glu
            1220   1225   1230

Ser Asn Leu Glu Asn Leu Leu Thr Arg Glu Thr Lys Met Lys Ser Leu

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                                  1235                   1240                        1245
Ile Arg Thr Leu Glu Gln Glu Lys Met Ala Tyr Gln Lys Thr Val Glu
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Gln Leu Arg Lys Leu Leu Pro Ala Asp Ala Leu Ala Asn Cys Asp Leu
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Leu Leu Arg Asp Leu Asn Cys Asn Pro Asn Asn Lys Ala Lys Ile Gly
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Asn Lys Pro
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<210> 47
<211> 2020
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<213> homo sapiens

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tacttgccag gaagagaaaa tagatgcctt acagttagag tattcatatt tactaacaag 1380
ccagctggaa tctcagcgaa tctactggga aaacaagata gttcggatag agaaggacac 1440
agcagaggaa attaacaaca tgaagaccaa gtttaaagaa acaattgaga gtgtgataa 1500
tctagagcac aaactaaatg atctcctaaa agaaaagcag tctgtggaaa gaaagtgcac 1560
tcagctaaac acaaaagtgg ccaaactcac caacgagctc aaagaggagc aggaaatgaa 1620
caagtgtttg cgagccaacc aagtcctcct gcagaacaag ctaaaagagg aggagagggt 1680
gctgaaggag acctgtgacc aaaaagatct gcagatcacc gagatccagg agcagctgcg 1740
tgacgtcatg ttctacctgg agacacagca gaagatcaac catctgcctg ccgagacccg 1800
gcagaaatcc aggagggaca gatcaacatc gccatggcct cggcctcgag ccctgcctct 1860
tcggggggca gtgggaagtt gccctccagg aagggccgca gcaagagggg caagtgacct 1920
tcagagcaac agacatccct gagactgttc tccctgacac tgtgagagtg tgctgggacc 1980
ttcagctaaa tgtgagggtg ggccctaata agtacaagtg              2020
```

<210> 48
<211> 600
<212> PRT
<213> homo sapiens

<400> 48
```
Met Ser Val Ser Leu Val Val Ile Arg Leu Glu Leu Ala Glu His Ser
 1               5                   10                      15
Pro Val Pro Ala Gly Phe Gly Phe Ser Ala Ala Ala Gly Glu Met Ser
                20                  25                      30
Asp Glu Glu Ile Lys Lys Thr Thr Leu Ala Ser Ala Val Ala Cys Leu
```

```
                              35                  40                  45
Glu Gly Lys Ser Pro Gly Glu Lys Val Ala Ile Ile His Gln His Leu
        50                  55                  60
Gly Arg Arg Glu Met Thr Asp Val Ile Ile Glu Thr Met Lys Ser Asn
65                  70                  75                  80
Pro Asp Glu Leu Lys Thr Thr Val Glu Glu Arg Lys Ser Ser Glu Ala
                85                  90                  95
Ser Pro Thr Ala Gln Arg Ser Lys Asp His Ser Lys Glu Cys Ile Asn
            100                 105                 110
Ala Ala Pro Asp Ser Pro Ser Lys Gln Leu Pro Asp Gln Ile Ser Phe
        115                 120                 125
Phe Ser Gly Asn Pro Ser Val Glu Ile Val His Gly Ile Met His Leu
    130                 135                 140
Tyr Lys Thr Asn Lys Met Thr Ser Leu Lys Glu Asp Val Arg Arg Ser
145                 150                 155                 160
Ala Met Leu Cys Ile Leu Thr Val Pro Ala Ala Met Thr Ser His Asp
                165                 170                 175
Leu Met Lys Phe Val Ala Pro Phe Asn Asp Val Ile Glu Gln Met Lys
            180                 185                 190
Ile Ile Arg Asp Ser Thr Pro Asn Gln Tyr Met Val Leu Ile Lys Phe
        195                 200                 205
Arg Ala Gln Ala Asp Ala Asp Ser Phe Tyr Met Thr Cys Asn Gly Arg
    210                 215                 220
Gln Phe Asn Ser Ile Glu Asp Asp Val Cys Gln Leu Val Tyr Val Glu
225                 230                 235                 240
Arg Ala Glu Val Leu Lys Ser Glu Asp Gly Ala Ser Leu Pro Val Met
                245                 250                 255
Asp Leu Thr Glu Leu Pro Lys Cys Thr Val Cys Leu Glu Arg Met Asp
            260                 265                 270
Glu Ser Val Asn Gly Ile Leu Thr Thr Leu Cys Asn His Ser Phe His
        275                 280                 285
Ser Gln Cys Leu Gln Arg Trp Asp Asp Thr Thr Cys Pro Val Cys Arg
    290                 295                 300
Tyr Cys Gln Thr Pro Glu Pro Val Glu Glu Asn Lys Cys Phe Glu Cys
305                 310                 315                 320
Gly Val Gln Glu Asn Leu Trp Ile Cys Leu Ile Cys Gly His Ile Gly
                325                 330                 335
Cys Gly Arg Tyr Val Ser Arg His Ala Tyr Lys His Phe Glu Glu Thr
            340                 345                 350
Gln His Thr Tyr Ala Met Gln Leu Thr Asn His Arg Val Trp Asp Tyr
        355                 360                 365
Ala Gly Asp Asn Tyr Val His Arg Leu Val Ala Ser Lys Thr Asp Gly
    370                 375                 380
Lys Ile Val Gln Tyr Glu Cys Glu Gly Asp Thr Cys Gln Glu Glu Lys
385                 390                 395                 400
Ile Asp Ala Leu Gln Leu Glu Tyr Ser Tyr Leu Leu Thr Ser Gln Leu
                405                 410                 415
Glu Ser Gln Arg Ile Tyr Trp Glu Asn Lys Ile Val Arg Ile Glu Lys
            420                 425                 430
Asp Thr Ala Glu Glu Ile Asn Asn Met Lys Thr Lys Phe Lys Glu Thr
        435                 440                 445
Ile Glu Lys Cys Asp Asn Leu Glu His Lys Leu Asn Asp Leu Leu Lys
    450                 455                 460
Glu Lys Gln Ser Val Glu Arg Lys Cys Thr Gln Leu Asn Thr Lys Val
465                 470                 475                 480
Ala Lys Leu Thr Asn Glu Leu Lys Glu Glu Gln Glu Met Asn Lys Cys
                485                 490                 495
Leu Arg Ala Asn Gln Val Leu Leu Gln Asn Lys Leu Lys Glu Glu Glu
            500                 505                 510
Arg Val Leu Lys Glu Thr Cys Asp Gln Lys Asp Leu Gln Ile Thr Glu
        515                 520                 525
Ile Gln Glu Gln Leu Arg Asp Val Met Phe Tyr Leu Glu Thr Gln Gln
    530                 535                 540
```

```
Lys Ile Asn His Leu Pro Ala Glu Thr Arg Gln Lys Ser Arg Arg Asp
545             550             555             560
Arg Ser Thr Ser Pro Trp Pro Arg Pro Arg Ala Leu Pro Leu Arg Gly
            565             570             575
Ala Val Gly Ser Cys Pro Pro Gly Arg Ala Ala Ala Arg Gly Ala Ser
            580             585             590
Asp Leu Gln Ser Asn Arg His Pro
        595             600
```

<210> 49
<211> 226
<212> DNA
<213> homo sapiens

<220>
<221> misc_feature
<222> 163, 168
<223> n = A,T,C or G

<400> 49
```
ctgggatact cccctcccag ggtgtctggt ggcaggcctg tgcctatccc tgctgtcccc 60
agggtgggcc ccggggggtca ggagctccag aagggccagc tgggcatatt ctgagattgg 120
ccatcagccc ccatttctgc tgcaaacctg gtcagagcca gtnttccntc catgggacct 180
aaagacagtg ccaagtgcct gcaccgtgga ccacagccga gccact            226
```

<210> 50
<211> 441
<212> DNA
<213> homo sapiens

<400> 50
```
gaaaaaaaaa acgagtatct attaactggc cactaacagt tgcctttctt acattaattt 60
atacactatt ttgttcagcc agtgtttta aaaaaaatct atgaaaagtg tacttccggt 120
tttctgtgat tacttatctg ggcttgatct gaccagtgaa atgacattgc cctatttgga 180
cctctgaggt tctatttagc tttgcagatg tacatagtat cccagtgatc tgcaaaatta 240
atgccttttc caagaaaaaa tcttttcttc tctgtatcag ttaattctga cagtgttagt 300
gattctgtct tcattatagg ccttatttcc attatctctt tctttatagt attttttgtt 360
ataaagaaaa cagtctttct gtgtatacct acggatgagg gtattattta aactgccaac 420
aatatccaag acatggtcaa t                                       441
```

<210> 51
<211> 393
<212> DNA
<213> homo sapiens

<400> 51
```
aagtctacag gtaagcagac atttctatac atgtcctggt cactctttct aaagtattta 60
taattaggtt attgaccatg tcttggatat tgttggcagt ttaaataata ccctcatccg 120
taggtataca cagaaagact gttttctttta taacaaaaaa tactataaag aaagagataa 180
tggaaataag gcctataatg aagacagaat cactaacact gtcagaatta actgatacag 240
agaagaaaag atttttttctt ggaaaaggca ttaattttgc agatcactgg gatactatgt 300
acatctgcaa agctaaatag aacctcagag gtccaaatag ggcaatgtca tttcactggt 360
cagatcaagc ccagataagt aatcacagaa aac                          393
```

<210> 52
<211> 427
<212> DNA
<213> homo sapiens

<400> 52
```
ttttttttttg tctatcagtc accttgaaac tggtaatctg attcaagtta aacaatgttc 60
cttttgaatc tagaaaacaa gagaaatgca aagtcattat tccctcattc tatgcttcca 120
```

```
tttactctaa gaattcagaa acaaacatgt gggtaacttc ctgttatctt aaaaaaagaa 180
tcatcccttc ggtattccct taactatctg gaacttgtac tgtcatttta taatttacca 240
tgtgacataa ttgtttgacc tgcctctttt atttgatgca tgacttctca gagaacctgt 300
tatcaactca ctgtgtaaaa ccacgatgaa atgaaggata actgatcaca aagaattatg 360
tcttttgata tccaacaaat ttacaaatta taagagaaaa atgcaatttt ttaaaaaagg 420
atatcct                                                          427
```

<210> 53
<211> 417
<212> DNA
<213> homo sapiens

<400> 53
```
aaaaacactg gctgaacaaa atagtgtata aattaatgta agaaaggcaa ctgttagtgg 60
ccagttaata gatactcgtt tttttttttc tcttcagttg cccactatta ttgcttattt 120
ttccttttct tgtctatcag tcaccttgaa actggtaatc tgattcaagt taaacaatgt 180
tccttttgaa tctagaaaac aagagaaatg caaagtcatt attccctcat tctatgcttc 240
catttactct aagaattcag aaacaaacat gtgggtaact tcctgttatc ttaaaaaaag 300
aatcatccct tcggtattcc cttaactatc tggaacttgt actgtcattt tataatttac 360
catgtgacat aattgtttga cctgcctctt ttatttgatg catgacttct cagagaa   417
```

<210> 54
<211> 362
<212> DNA
<213> homo sapiens

<400> 54
```
ctcttcagtt gcccactatt attgcttatt tttccttttc ttgtctatca gtcaccttga 60
aactggtaat ctgattcaag ttaaacaatg ttccttttga atctagaaaa caagagaaat 120
gcaaagtcat tattccctca ttctatgctt ccatttactc taagaattca gaaacaaaca 180
tgtgggtaac ttcctgttat cttaaaaaaa gaatcatccc ttcggtattc ccttaactat 240
ctggaacttg tactgtcatt ttataattta ccatgtgaca taattgtttg acctgcctct 300
tttatttgat gcatgacttc tcagagaacc tgttatcaac tcactgtgta aaaccacgat 360
ga                                                               362
```

<210> 55
<211> 236
<212> DNA
<213> homo sapiens

<400> 55
```
tttttctctt cagttgcccg ctattattgc ttattttttcc ttttcttgtc tatcagtcac 60
cttgaaactg gtaatctgat tcaagttaaa caatgttcct tttgaatcta gaaaacaaga 120
gaaatgcaaa gtcattattc cctcattcta tgcttccatt tactctaaga attcagaaac 180
aaacatgtgg gtaacttcct gttatcttaa aaaagaatc atcccttcgg tcgacg      236
```

<210> 56
<211> 368
<212> DNA
<213> homo sapiens

<400> 56
```
agaaacagtc tttctgtgta tacctacgga tgagggtatt atttaaactg ccaacaatat 60
ccaagacatg gtcaataacc taattataaa tactttagaa agagtgacca ggacatgtat 120
agaaatgtct gcttacctgt agactttaaa aacaaacaaa aaaacaaac aaaatttttg 180
gagcatttaa tcattttttt tctcctttta tctcctttgt aatcttattg tctcctgagt 240
aaatatacac ataaatgttt ggggattcat tgctgctaga ttatatcagg tgtttacata 300
gtgtctacta tatgctgttg ataagctttt tcctaaaaat agttatcctc ttttgtagtg 360
tttttccc                                                         368
```

<210> 57
<211> 153
<212> DNA

<213> homo sapiens

<400> 57
tttttttttg tctatcagtc accttgaaac tggtaatctg attcaagtta aacaatgttc 60
cttttgaatc tagaaaacaa gagaaatgca aagtcattat tccctcattc tatgcttcca 120
tttactctaa gaattcagaa acaaacatgt ggg   153

<210> 58
<211> 324
<212> DNA
<213> homo sapiens

<400> 58
agaaaacagt ctttctgygt atacctacgg atsagggtat tatttaaact gccamcaata 60
tccaagvcat ggtcaataac ctaadcataa mtactttaga aagagtgacc aggccatgta 120
tagaaatgtc tgcttactgt agactttaaa aacaaacaaa aaaacaaaca aatthttgga 180
gcatttaatc attthttttc tccttttatc tcctthtgta atcttattgt ctcctgagta 240
aatatacaca taaatstttk gggattcatt gctgbhagat tatatcaggt gtttacatag 300
tgtctactat atgctgttga taag   324

<210> 59
<211> 416
<212> DNA
<213> homo sapiens

<400> 59
gtctatcagt caccttgaaa ctggtaatct gattcaagtt aaacaatgtt ccttttgaat 60
ctagaaaaca agagaaatgc aaagtcatta ttccctcatt ctatgcttcc atttactcta 120
agaattcaga aacaaacatg tgggtaactt cctgttatct taaaaaaga atcatccctt 180
cggtattccc ttaactatct ggaacttgta ctgtcatttt ataatttacc atgtgacata 240
attgtttgac ctgcctcttt tatttgatgc atgacttctc agagaacctg ttatcaactc 300
actgtgtaaa accacgatga aatgaaggat aactgatcac aaagaattat gtcttttgag 360
atccaacaaa tttacaaatt ataagagaaa aatgcaattt tttaaaaaag gatatc   416

<210> 60
<211> 2489
<212> DNA
<213> homo sapiens

<400> 60
ctccgccgcg ggagggagct gcggctgtgc cggccgagcg ggggagggcg ccgccactca 60
gagccaggga gggagccgct ggagcggaag cccggaggcc gcgctgcgcc ggggtgaggt 120
ggctttgacc ccgggttgcc cggccagcac gaccgaggag gtggctggac agctggagga 180
tgaacggaga agccgactgc cccacagacc tggaaatggc cgcccccaaa ggccaagacc 240
gttggtccca ggaagacatg ctgactttgc tggaatgcat gaagaacaac cttccatcca 300
atgacagctc caagttcaaa accaccgaat cacacatgga ctgggaaaaa gtagcattta 360
aagacttttc tggagacatg tgcaagctca aatgggtgga gatttctaat gaggtgagga 420
agttccgtac attgacagaa ttgatcctcg atgctcagga acatgttaaa aatccttaca 480
aaggcaaaaa actcaagaaa cacccagact tcccaaagaa gcccctgacc ccttatttcc 540
gcttcttcat ggagaagcgg gccaagtatg cgaaactcca ccctgagatg agcaacctgg 600
acctaaccaa gattctgtcc aagaaataca aggagcttcc ggagaagaag aagatgaaat 660
atattcagga cttccagaga gagaaacagg agttcgagcg aaacctggcc cgattcaggg 720
aggatcaccc cgacctaatc cagaatgcca agaaatcgga catcccagag aagcccaaaa 780
cccccccagca gctgtggtac acccacgaga agaaggtgta tctcaaagtg cggccagatg 840
agatcatgag agactatatc cagaagcacc cagagctgaa catcagtgag gagggtatca 900
ccaagtccac cctcaccaag gccgaacgcc agctcaagga caagtttgac gggcgaccca 960
ccaagccacc tccgaacagc tactcgctgt actgcgcaga gctcatggcc aacatgaagg 1020
acgtgcccag cacagagcgc atggtgctgt gcagccagca gtggaagctg ctgtcccaga 1080
aggagaagga cgcctatcac aagaagtgtg atcagaaaaa gaaagattac gaggtggagc 1140
tgctccgttt cctcgagagc ctgcctgagg aggagcagca gcgggtcttg ggggaagaga 1200
agatgctgaa catcaacaag aagcaggcca ccagccccgc ctccaagaag ccagcccagg 1260
aagggggcaa gggcggctcc gagaagccca gcggcccgt gtcggccatg ttcatcttct 1320
cggaggagaa acggcggcag ctgcaggagg agcggcctga gctctccgag agcgagctga 1380

```
cccgcctgct ggcccgaatg tggaacgacc tgtctgagaa gaagaaggcc aagtacaagg 1440
cccgagaggc ggcgctcaag gctcagtcgg agaggaagcc cggcgggggag cgcgaggaac 1500
ggggcaagct gcccgagtcc cccaaaagag ctgaggagat ctggcaacag agcgttatcg 1560
gcgactacct ggcccgcttc aagaatgacc gggtgaaggc cttgaaagcc atggaaatga 1620
cctggaataa catggaaaag aaggagaaac tgatgtggat taagaaggca gccgaagacc 1680
aaaagcgata tgagagagag ctgagtgaga tgcgggcacc tccagctgct acaaattctt 1740
ccaagaagat gaaattccag ggagaaccca agaagcctcc catgaacggt taccagaagt 1800
tctcccagga gctgctgtcc aatggggagc tgaaccacct gccgctgaag gagcgcatgg 1860
tggagatcgg cagtcgctgg cagcgcatct cccagagcca gaaggagcac tacaaaaagc 1920
tggccgagga gcagcaaaag cagtacaagg tgcacctgga cctctgggtt aagagcctgt 1980
ctccccagga ccgtgcagca tataaagagt acatctccaa taaacgtaag agcatgacca 2040
agctgcgagg cccaaacccc aaatccagcc ggactactct gcagtccaag tcggagtccg 2100
aggaggatga tgaagaggat gaggatgacg aggacgagga tgaagaagag aagatgatg 2160
agaatgggga ctcctctgaa gatggcggcg actcctctga gtccagcagc gaggacgaga 2220
gcgaggatgg ggatgagaat gaagaggatg acgaggacga agacgacgac gaggatgacg 2280
atgaggatga agataatgag tccgagggca gcagctccag ctcctcctcc tcaggggact 2340
cctcagactc tgactccaac tgaggctcag ccccacccca gggcagccag ggagagccca 2400
ggagctcccc tccccaactg accacctttg tttctccccc atgttctgtc ccttgccccc 2460
ctggcctccc ccactttctt tctttctttt                                   2489
```

<210> 61
<211> 727
<212> PRT
<213> homo sapiens

<400> 61
```
Met Asn Gly Glu Ala Asp Cys Pro Thr Asp Leu Glu Met Ala Ala Pro
1               5                  10                 15
Lys Gly Gln Asp Arg Trp Ser Gln Glu Asp Met Leu Thr Leu Leu Glu
            20                 25                 30
Cys Met Lys Asn Asn Leu Pro Ser Asn Asp Ser Ser Lys Phe Lys Thr
            35                 40                 45
Thr Glu Ser His Met Asp Trp Glu Lys Val Ala Phe Lys Asp Phe Ser
    50                 55                 60
Gly Asp Met Cys Lys Leu Lys Trp Val Glu Ile Ser Asn Glu Val Arg
65                 70                 75                 80
Lys Phe Arg Thr Leu Thr Glu Leu Ile Leu Asp Ala Gln Glu His Val
                85                 90                 95
Lys Asn Pro Tyr Lys Gly Lys Lys Leu Lys Lys His Pro Asp Phe Pro
            100                105                110
Lys Lys Pro Leu Thr Pro Tyr Phe Arg Phe Phe Met Glu Lys Arg Ala
            115                120                125
Lys Tyr Ala Lys Leu His Pro Glu Met Ser Asn Leu Asp Leu Thr Lys
    130                135                140
Ile Leu Ser Lys Lys Tyr Lys Glu Leu Pro Glu Lys Lys Lys Met Lys
145                150                155                160
Tyr Ile Gln Asp Phe Gln Arg Glu Lys Gln Glu Phe Glu Arg Asn Leu
                165                170                175
Ala Arg Phe Arg Glu Asp His Pro Asp Leu Ile Gln Asn Ala Lys Lys
            180                185                190
Ser Asp Ile Pro Glu Lys Pro Lys Thr Pro Gln Gln Leu Trp Tyr Thr
            195                200                205
His Glu Lys Lys Val Tyr Leu Lys Val Arg Pro Asp Glu Ile Met Arg
    210                215                220
Asp Tyr Ile Gln Lys His Pro Glu Leu Asn Ile Ser Glu Glu Gly Ile
225                230                235                240
Thr Lys Ser Thr Leu Thr Lys Ala Glu Arg Gln Leu Lys Asp Lys Phe
                245                250                255
Asp Gly Arg Pro Thr Lys Pro Pro Pro Asn Ser Tyr Ser Leu Tyr Cys
            260                265                270
Ala Glu Leu Met Ala Asn Met Lys Asp Val Pro Ser Thr Glu Arg Met
            275                280                285
Val Leu Cys Ser Gln Gln Trp Lys Leu Leu Ser Gln Lys Glu Lys Asp
```

```
                              290                 295                 300
Ala Tyr His Lys Lys Cys Asp Gln Lys Lys Lys Asp Tyr Glu Val Glu
305                 310                 315                 320
Leu Leu Arg Phe Leu Glu Ser Leu Pro Glu Glu Glu Gln Gln Arg Val
                325                 330                 335
Leu Gly Glu Glu Lys Met Leu Asn Ile Asn Lys Lys Gln Ala Thr Ser
                340                 345                 350
Pro Ala Ser Lys Lys Pro Ala Gln Glu Gly Gly Lys Gly Gly Ser Glu
                355                 360                 365
Lys Pro Lys Arg Pro Val Ser Ala Met Phe Ile Phe Ser Glu Glu Lys
                370                 375                 380
Arg Arg Gln Leu Gln Glu Glu Arg Pro Glu Leu Ser Glu Ser Glu Leu
385                 390                 395                 400
Thr Arg Leu Leu Ala Arg Met Trp Asn Asp Leu Ser Glu Lys Lys Lys
                405                 410                 415
Ala Lys Tyr Lys Ala Arg Glu Ala Ala Leu Lys Ala Gln Ser Glu Arg
                420                 425                 430
Lys Pro Gly Gly Glu Arg Glu Glu Arg Gly Lys Leu Pro Glu Ser Pro
                435                 440                 445
Lys Arg Ala Glu Glu Ile Trp Gln Gln Ser Val Ile Gly Asp Tyr Leu
                450                 455                 460
Ala Arg Phe Lys Asn Asp Arg Val Lys Ala Leu Lys Ala Met Glu Met
465                 470                 475                 480
Thr Trp Asn Asn Met Glu Lys Lys Glu Lys Leu Met Trp Ile Lys Lys
                485                 490                 495
Ala Ala Glu Asp Gln Lys Arg Tyr Glu Arg Glu Leu Ser Glu Met Arg
                500                 505                 510
Ala Pro Pro Ala Ala Thr Asn Ser Ser Lys Lys Met Lys Phe Gln Gly
                515                 520                 525
Glu Pro Lys Lys Pro Pro Met Asn Gly Tyr Gln Lys Phe Ser Gln Glu
                530                 535                 540
Leu Leu Ser Asn Gly Glu Leu Asn His Leu Pro Leu Lys Glu Arg Met
545                 550                 555                 560
Val Glu Ile Gly Ser Arg Trp Gln Arg Ile Ser Gln Ser Gln Lys Glu
                565                 570                 575
His Tyr Lys Lys Leu Ala Glu Glu Gln Gln Lys Gln Tyr Lys Val His
                580                 585                 590
Leu Asp Leu Trp Val Lys Ser Leu Ser Pro Gln Asp Arg Ala Ala Tyr
                595                 600                 605
Lys Glu Tyr Ile Ser Asn Lys Arg Lys Ser Met Thr Lys Leu Arg Gly
                610                 615                 620
Pro Asn Pro Lys Ser Ser Arg Thr Thr Leu Gln Ser Lys Ser Glu Ser
625                 630                 635                 640
Glu Glu Asp Asp Glu Glu Asp Glu Asp Glu Asp Glu Asp Glu Glu
                645                 650                 655
Glu Glu Asp Asp Glu Asn Gly Asp Ser Ser Glu Asp Gly Gly Asp Ser
                660                 665                 670
Ser Glu Ser Ser Ser Glu Asp Glu Ser Glu Asp Gly Asp Glu Asn Glu
                675                 680                 685
Glu Asp Asp Glu Asp Glu Asp Asp Glu Asp Asp Asp Glu Asp Glu
                690                 695                 700
Asp Asn Glu Ser Glu Gly Ser Ser Ser Ser Ser Ser Ser Gly Asp
705                 710                 715                 720
Ser Ser Asp Ser Asp Ser Asn
                725
```

<210> 62
<211> 607
<212> DNA
<213> homo sapiens

<220>

<221> misc_feature
<222> 602
<223> n = A,T,C or G

<400> 62
```
ttttcagcat gagaatatgt gaatatgttt atttaggttt aacttacttc ttactatata 60
gatttggctt gttttttata ataacaactg atatatgatt cacaaaaaag cagagaagag 120
taagagaaag agagagaaat ggagaaagag aagaaaaaag ggataaagaa tgaaagagag 180
aaagagaata ccattctcta aaggaagagg tgcagaaaat tccattatcc tttcttcttg 240
atcatgcctt gtatgattgg cagccaaact agcccactgt gaaacccaac gtttgcttcc 300
agatgaagat gtgccttcct ctgagtggtg aaatccagat gtagtcagtg gttttctttc 360
ttccattact gctgcagcag aactgagagc ccaatctttt attagatctt tatgtttttc 420
gttgataaca ggcctattat aatccgattg tcatctactc caaacacaac agctggtctg 480
atgctttcag tagccggacc tctgtagctt ttgtgttcga atggtggcgt ctaagtgttc 540
ctcaagagtt gcacgtttgc tacagcgccg tgagccccag cgttctctga atcacttgcg 600
tncatca                                                         607
```

<210> 63
<211> 402
<212> DNA
<213> homo sapiens

<220>
<221> misc_feature
<222> 35
<223> n = A,T,C or G

<400> 63
```
ggcagagcac agaccaagcc aggagatgga taaangttaa aaaatcaagc aacttctgct 60
acttctgaaa aggataatga tgatgaccaa agtgacaagg gtacttatac cattgagtta 120
gagaatccca acagtgagga agtggaagca agaaaaatga ttcacaaggt aaataattga 180
aatttgagtg tgatcttagt tgttgtgtgg tgtatttgac tggtggaaat tattggagag 240
tcagcatgag atgttgtcat gcagtcagtg gtatgtgaat tttagggttt tattagggaa 300
ctgcaagact aacagtaaga ccaacatgct ttgtgatttt atttgctgat attctgaatt 360
tacctgagtt tcatacataa agctctgtac atttaaaagg tt                 402
```

<210> 64
<211> 607
<212> DNA
<213> homo sapiens

<220>
<221> misc_feature
<222> 602
<223> n = A,T,C or G

<400> 64
```
ttttcagcat gagaatatgt gaatatgttt atttaggttt aacttacttc ttactatata 60
gatttggctt gttttttata ataacaactg atatatgatt cacaaaaaag cagagaagag 120
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Lys Glu Leu Glu Ile Ala Gln Asp Arg Asn Ile Ala Ile Gln Ser Gln
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Phe Thr Arg Thr Lys Glu Glu Leu Glu Ala Glu Lys Arg Asp Leu Ile
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Arg Thr Asn Glu Arg Leu Ser Gln Glu Leu Glu Tyr Leu Thr Glu Asp
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Val Lys Arg Leu Asn Glu Lys Leu Lys Glu Ser Asn Thr Thr Lys Gly
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Leu Leu Thr Lys Leu Lys Glu Ala Lys Glu Gln Gln Ala Ser Met Glu
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Glu Lys Phe His Asn Glu Leu Asn Ala His Ile Lys Leu Ser Asn Leu
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Tyr Lys Ser Ala Ala Asp Asp Ser Glu Ala Lys Ser Asn Glu Leu Thr
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Arg Ala Val Glu Glu Leu His Lys Leu Leu Lys Glu Ala Gly Glu Ala
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Asn Lys Ala Ile Gln Asp His Leu Leu Glu Val Glu Gln Ser Lys Asp
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Ile Leu Ser Glu Glu Glu Leu Ala Ala Met Ser Pro Thr Ala Ala Ala
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Val Ala Lys Ile Val Lys Pro Gly Met Lys Leu Thr Glu Leu Tyr Asn
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Ala Tyr Val Glu Thr Gln Asp Gln Leu Leu Leu Glu Lys Leu Glu Asn
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Lys Arg Ile Asn Lys Tyr Leu Asp Glu Ile Val Lys Glu Val Glu Ala
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Lys Ala Pro Ile Leu Lys Arg Gln Arg Glu Glu Tyr Glu Arg Ala Gln
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Lys Ala Val Ala Ser Leu Ser Val Lys Leu Glu Gln Ala Met Lys Glu
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Val Leu Glu Arg Asp Asn Arg Arg Met Glu Ile Gln Val Lys Asp Leu
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Ser Gln Gln Ile Arg Val Leu Leu Met Glu Leu Glu Glu Ala Arg Gly
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Asn His Val Ile Arg Asp Glu Glu Val Ser Ser Ala Asp Ile Ser Ser
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Ser Ser Glu Val Ile Ser Gln His Leu Val Ser Tyr Arg Asn Ile Glu
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Gly Glu Thr Arg Glu Arg Glu Glu Glu Thr Thr Ser Ser Lys Ile
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Thr Glu Leu Gln Leu Lys Leu Glu Ser Ala Leu Thr Glu Leu Glu Gln
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Leu Arg Lys Ser Arg Gln His Gln Met Gln Leu Val Asp Ser Ile Val
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Arg Gln Arg Asp Met Tyr Arg Ile Leu Leu Ser Gln Thr Thr Gly Val
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Ala Ile Pro Leu His Ala Ser Ser Leu Asp Asp Val Ser Leu Ala Ser
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Thr Pro Lys Arg Pro Ser Thr Ser Gln Thr Val Ser Thr Pro Ala Pro
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Val Pro Val Ile Glu Ser Thr Glu Ala Ile Glu Ala Lys Ala Ala Leu

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Ala Ser Lys Arg Tyr Glu Met Leu Gln Asp Asn Val Glu Gly Tyr Arg
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Arg Glu Ile Thr Ser Leu His Glu Arg Asn Gln Lys Leu Thr Ala Thr
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1345            1350            1355            1360
Lys Glu Val His Thr Lys Arg Ile Gln Gln Leu Thr Glu Glu Ile Gly
            1365            1370            1375
Arg Leu Lys Ala Glu Ile Ala Arg Ser Asn Ala Ser Leu Thr Asn Asn
            1380            1385            1390
Gln Asn Leu Ile Gln Ser Leu Lys Glu Asp Leu Asn Lys Val Arg Thr
            1395            1400            1405
Glu Lys Glu Thr Ile Gln Lys Asp Leu Asp Ala Lys Ile Ile Asp Ile
    1410            1415            1420
Gln Glu Lys Val Lys Thr Ile Thr Gln Val Lys Lys Ile Gly Arg Arg
1425            1430            1435            1440
Tyr Lys Thr Gln Tyr Glu Glu Leu Lys Ala Gln Gln Asp Lys Val Met
            1445            1450            1455
Glu Thr Ser Ala Gln Ser Ser Gly Asp His Gln Glu Gln His Val Ser
            1460            1465            1470
Val Gln Glu Met Gln Glu Leu Lys Glu Thr Leu Asn Gln Ala Glu Thr
    1475            1480            1485
Lys Ser Lys Ser Leu Glu Ser Gln Val Glu Asn Leu Gln Lys Thr Leu
    1490            1495            1500
Ser Glu Lys Glu Thr Glu Ala Arg Asn Leu Gln Glu Gln Thr Val Gln
1505            1510            1515            1520
Leu Gln Ser Glu Leu Ser Arg Leu Arg Gln Asp Leu Gln Asp Arg Thr
            1525            1530            1535
Thr Gln Glu Glu Gln Leu Arg Gln Gln Ile Thr Glu Lys Glu Glu Lys
            1540            1545            1550
Thr Arg Lys Ala Ile Val Ala Ala Lys Ser Lys Ile Ala His Leu Ala
    1555            1560            1565
Gly Val Lys Asp Gln Leu Thr Lys Glu Asn Glu Glu Leu Lys Gln Arg
    1570            1575            1580
Asn Gly Ala Leu Asp Gln Gln Lys Asp Glu Leu Asp Val Arg Ile Thr
1585            1590            1595            1600
Ala Leu Lys Ser Gln Tyr Glu Gly Arg Ile Ser Arg Leu Glu Arg Glu
            1605            1610            1615
Leu Arg Glu His Gln Glu Arg His Leu Glu Gln Arg Asp Glu Pro Gln
            1620            1625            1630
Glu Pro Ser Asn Lys Val Pro Glu Gln Gln Arg Gln Ile Thr Leu Lys
            1635            1640            1645
Thr Thr Pro Ala Ser Gly Glu Arg Gly Ile Ala Ser Thr Ser Asp Pro
    1650            1655            1660
Pro Thr Ala Asn Ile Lys Pro Thr Pro Val Val Ser Thr Pro Ser Lys
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      1665                  1670                  1675                  1680
Val Thr Ala Ala Ala Met Ala Gly Asn Lys Ser Thr Pro Arg Ala Ser
                  1685                  1690                  1695
Ile Arg Pro Met Val Thr Pro Ala Thr Val Thr Asn Pro Thr Thr Thr
            1700                  1705                  1710
Pro Thr Ala Thr Val Met Pro Thr Thr Gln Val Glu Ser Gln Glu Ala
            1715                  1720                  1725
Met Gln Ser Glu Gly Pro Val Glu His Val Pro Val Phe Gly Ser Thr
      1730                  1735                  1740
Ser Gly Ser Val Arg Ser Thr Ser Pro Asn Val Gln Pro Ser Ile Ser
1745                  1750                  1755                  1760
Gln Pro Ile Leu Thr Val Gln Gln Gln Thr Gln Ala Thr Ala Phe Val
            1765                  1770                  1775
Gln Pro Thr Gln Gln Ser His Pro Gln Ile Glu Pro Ala Asn Gln Glu
            1780                  1785                  1790
Leu Ser Ser Asn Ile Val Glu Val Val Gln Ser Ser Pro Val Glu Arg
      1795                  1800                  1805
Pro Ser Thr Ser Thr Ala Val Phe Gly Thr Val Ser Ala Thr Pro Ser
      1810                  1815                  1820
Ser Ser Leu Pro Lys Arg Thr Arg Glu Glu Glu Asp Ser Thr Ile
1825                  1830                  1835                  1840
Glu Ala Ser Asp Gln Val Ser Asp Asp Thr Val Glu Met Pro Leu Pro
                  1845                  1850                  1855
Lys Lys Leu Lys Ser Val Thr Pro Val Gly Thr Glu Glu Glu Val Met
            1860                  1865                  1870
Ala Glu Glu Ser Thr Asp Gly Glu Val Glu Thr Gln Val Tyr Asn Gln
      1875                  1880                  1885
Asp Ser Gln Asp Ser Ile Gly Glu Gly Val Thr Gln Gly Asp Tyr Thr
      1890                  1895                  1900
Pro Met Glu Asp Ser Glu Glu Thr Ser Gln Ser Leu Gln Ile Asp Leu
1905                  1910                  1915                  1920
Gly Pro Leu Gln Ser Asp Gln Gln Thr Thr Thr Ser Ser Gln Asp Gly
            1925                  1930                  1935
Gln Gly Lys Gly Asp Asp Val Ile Val Ile Asp Ser Asp Asp Glu Glu
            1940                  1945                  1950
Glu Asp Glu Glu Asp Asp Asp Asp Glu Asp Asp Thr Gly Met Gly
      1955                  1960                  1965
Asp Glu Gly Glu Asp Ser Asn Glu Gly Thr Gly Ser Ala Asp Gly Asn
      1970                  1975                  1980
Asp Gly Tyr Glu Ala Asp Asp Ala Glu Gly Gly Asp Gly Thr Asp Pro
1985                  1990                  1995                  2000
Gly Thr Glu Thr Glu Glu Ser Met Gly Gly Gly Glu Gly Asn His Arg
                  2005                  2010                  2015
Ala Ala Asp Ser Gln Asn Ser Gly Glu Gly Asn Thr Gly Ala Ala Glu
            2020                  2025                  2030
Ser Ser Phe Ser Gln Glu Val Ser Arg Glu Gln Gln Pro Ser Ser Ala
            2035                  2040                  2045
Ser Glu Arg Gln Ala Pro Arg Ala Pro Gln Ser Pro Arg Arg Pro Pro
      2050                  2055                  2060
His Pro Leu Pro Pro Arg Leu Thr Ile His Ala Pro Pro Gln Glu Leu
2065                  2070                  2075                  2080
Gly Pro Pro Val Gln Arg Ile Gln Met Thr Arg Arg Gln Ser Val Gly
            2085                  2090                  2095
Arg Gly Leu Gln Leu Thr Pro Gly Ile Gly Gly Met Gln Gln His Phe
            2100                  2105                  2110
Phe Asp Asp Glu Asp Arg Thr Val Pro Ser Thr Pro Thr Leu Val Val
      2115                  2120                  2125
Pro His Arg Thr Asp Gly Phe Ala Glu Ala Ile His Ser Pro Gln Val
      2130                  2135                  2140
Ala Gly Val Pro Arg Phe Arg Phe Gly Pro Pro Glu Asp Met Pro Gln
2145                  2150                  2155                  2160
Thr Ser Ser Ser His Ser Asp Leu Gly Gln Leu Ala Ser Gln Gly Gly
            2165                  2170                  2175
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Leu Gly Met Tyr Glu Thr Pro Leu Phe Leu Ala His Glu Glu Glu Ser
            2180                2185                2190
Gly Gly Arg Ser Val Pro Thr Thr Pro Leu Gln Val Ala Ala Pro Val
            2195                2200                2205
Thr Val Phe Thr Glu Ser Thr Thr Ser Asp Ala Ser Glu His Ala Ser
        2210                2215                2220
Gln Ser Val Pro Met Val Thr Thr Ser Thr Gly Thr Leu Ser Thr Thr
2225                2230                2235                2240
Asn Glu Thr Ala Thr Gly Asp Asp Gly Asp Glu Val Phe Val Glu Ala
            2245                2250                2255
Glu Ser Glu Gly Ile Ser Ser Glu Ala Gly Leu Glu Ile Asp Ser Gln
            2260                2265                2270
Gln Glu Glu Glu Pro Val Gln Ala Ser Asp Glu Ser Asp Leu Pro Ser
            2275                2280                2285
Thr Ser Gln Asp Pro Pro Ser Ser Ser Ser Val Asp Thr Ser Ser Ser
            2290                2295                2300
Gln Pro Lys Pro Phe Arg Arg Val Arg Leu Gln Thr Thr Leu Arg Gln
2305                2310                2315                2320
Gly Val Arg Gly Arg Gln Phe Asn Arg Arg Gly Val Ser His Ala
            2325                2330                2335
Met Gly Gly Arg Gly Gly Ile Asn Arg Gly Asn Ile Asn
            2340                2345
```

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